

Algebra Mid-Term Review

Foundations for Algebra

Directions: Simplify.

1. $-3^2 + 2 - 5 \cdot 4$
2. $\frac{5 + 4(3 + 2)^2}{7 - 2^2}$
3. $-\frac{5}{6} \div \left(-\frac{3}{4}\right)$
4. 4^5
5. $\frac{-2 - 6}{x^2}$ for $x = 2$
6. $8(x - 1)^3$ for $x = 5$
7. $4(x + 3)$
8. $-5(y - 7) - (y + 4)$
9. $12(-2 - r) + (r - 1)$
10. $6g - 5 + 2g^2 - 4g + g - 3g^2 - 2$
11. $5w + 3s - 7w - 8s + 4$
12. $4x + 12 - 3x - 2 - 2x$
13. $\frac{3r + 2t}{48}$, when $r = 3$ and $t = -\frac{1}{2}$
14. $\frac{(46 - 37)^2 - 11}{64 \div 2 - (2^4 + 8)}$
15. $\sqrt{\frac{36}{25}} \div \left(\frac{2}{3}\right)$

Equations

Directions: Solve.

1. $\frac{x - 1}{3} = \frac{x + 1}{5}$
2. $\frac{1}{x - 3} = \frac{3}{x - 5}$
3. $5x = 35$
4. $3x - 5 = 16$
5. $\frac{x}{5} - 2 = 3$
6. $\frac{x + 4}{2} = 5$
7. $3(x + 1) + 2x = 28$
8. $9x - 2(4 + x) = 5x - 32$
9. $2 - x = 15 - x$
10. $3(x + 2) + 5 + x = 6(x + 3) - 2x - 7$
11. $4(x - 3) + 7 = 3(x - 4)$

Functions

Directions: Write y as a function of x .

1. $2x + 3y = 5$
2. $2y + 4x = 3x + 5$
3. $\frac{2y + 4}{2} = 3x$

Directions: Evaluate.

1. $f(x) = 2x + 3$ for $f(2)$ and $f(4)$
2. $g(x) = \frac{1}{2}x + 3$ for $g(4)$ and $g(12)$
3. $f(x) = 6x - 2$ for $f(x) = 16$

Algebra Mid-Term Review

Linear Equations

Directions: Find the slope of the line.

1. (4, 6) and (7, -3)

2. (-9, -12) and (-2, 8)

3. (1, 1) and (10, 3)

Directions: Find the slope of the line.

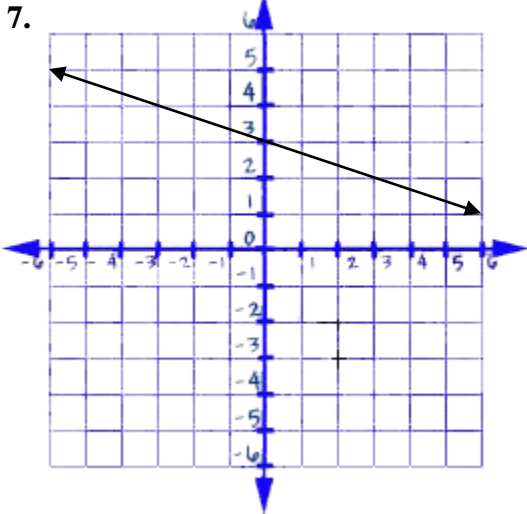
4. $4x + 5y = 10$

5. $3x - 2y = 12$

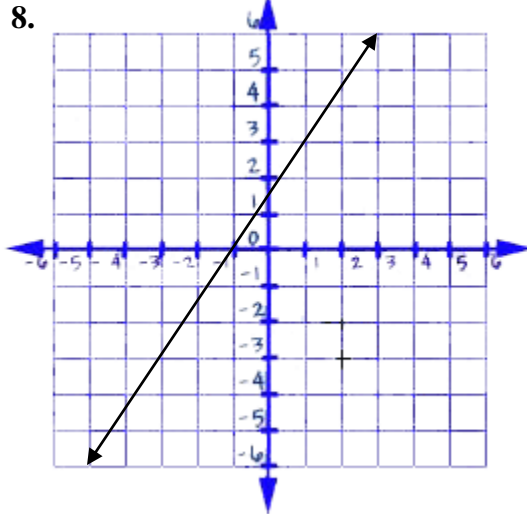
6. $\frac{1}{3}x + \frac{3}{4}y = \frac{2}{3}$

Directions: Find the slope of the line.

7.



8.



Directions: Describe the line given the slope

1. $m = -\frac{2}{5}$

2. $m = \frac{3}{7}$

Directions: Graph the line using the x and y intercepts

1. $4x + 6y = 36$

2. $3x - 2y = 12$

3. $2x + 5y = 10$

Directions: Put the equation in slope intercept form, then graph.

1. $2y + 4x = 3x + 6$

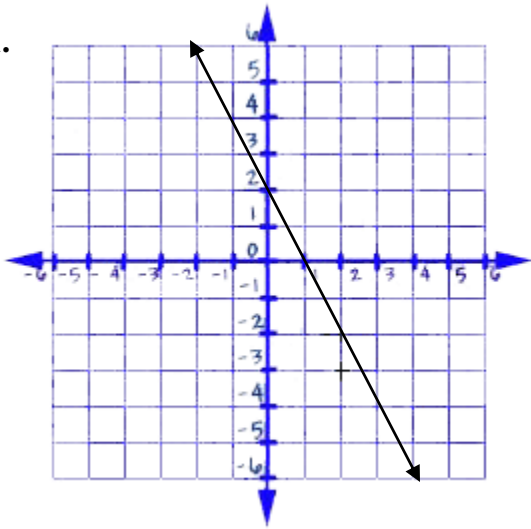
2. $8x - 6y = 24$

3. $3x - 2y = 15 + 3y$

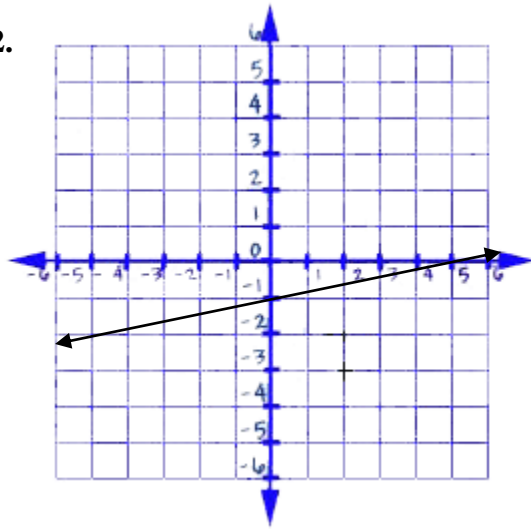
Algebra Mid-Term Review

Directions: Write the equation of the line in slope intercept form given the following.

1.



2.



Directions: Write the equation of the line in slope intercept form given the following.

3. Slope = $\frac{2}{3}$; (4, 6)

4. Slope = 3 ; (5, 7)

5. (2, 7) and (-4, 4)

6. (4, -1) and (-8, -10)

7. $m = \frac{1}{5}$; (2, -6)

Products as Sums

Write the following product as a sum.

1. $(x + 5)(3x - 1)$

2. $(2x - 1)(x - 3)$

3. $(x + 3)(x + 3)$

4. $(3x + 2)(x - 6)$

5. $(2x + 1)(2x - 1)$

6. $(4x - 5)(x + 2)$

Algebra Mid-Term Review

Systems of Equations: Solve the following systems

1. $y = 3x + 7$
 $y = -4x + 21$

2. $3x - y = 17$
 $-x + y = -7$

3. $x = 3y - 5$
 $2x + 12y = -4$

Exponents

1 Using your knowledge of exponents, rewrite each expression below so that there are no negative exponents or parentheses remaining.

a. $\frac{4x^{18}}{(2x^{22})^0}$

b. $(s^4tu^2)(s^7t^{-1})$

c. $(3w^{-2})^4$

d. m^{-3}

2 Simplify each expression.

a. $(5x^3)^2$

b. $\frac{14a^3b^2}{21a^4b}$

c. $2m^3n^2 \cdot 3mn^4$